UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

AUG 26 1991

SUBJECT: RCRA Statement of Basis
DuPont Experimental Station
Wilmington, Delaware

FROM: Bruce P. Smith, Director
Office of Hazardous Programs (3HW03)

TO: Thomas C. Voltaggio, Director
Hazardous Waste Management Division (3HW00)

Recommended Action:

Sign the attached RCRA Statement of Basis.

Purpose of the Statement of Basis:

This Statement of Basis (SB) provides EPA's justification for the Agency's preliminary selection of the preferred Corrective Measure Alternative for the DuPont Experimental Station Facility, located in Wilmington Delaware. This SB briefly summarizes the results of the Corrective Measures Study (CMS) prepared by DuPont, discussing the "No Further Action with Monitoring" alternative presented in the CMS, and provides EPA's rationale for its preliminary selection.

A workgroup consisting of the RCRA Project Manager (Robert W. Stroud), a RCRA hydrogeologist (Thomas Buntin), and a RCRA toxicologist (Dr. Kathleen Shelton), reviewed and commented on DuPont's draft CMS which considered a "No Further Action with Monitoring" alternative. The workgroup's preliminary selection of a "No Further Action with Monitoring" alternative is based on a EPA approved risk assessment and is a risk based decision.

Future Actions:

Upon signature by the Division Director, the SB and all other relevant or supporting documents (the RCRA Facility Investigation, the CMS) will be made available to the public for comment. This public comment will last thirty (30) days. A public meeting will be held Tuesday, September 17, 1991. After the public comment period, EPA will, depending on the nature of substantive public comment, either revise the corrective measure alternative, or finalize its decision on EPA's preferred corrective measure alternative and prepare a Response to Comments addressing substantive public comment on EPA's preferred corrective measure alternative. EPA will then prepare a RCRA Record of Decision (ROD) for the final corrective measure alternative and make both the RCRA ROD and the Response to Comment available to the public. Following this, EPA and DuPont will consider several options for implementation of the monitoring program for this facility.

EPA
Region III

E.I. DuPont deNemours & Company
Experimental Station (DuPont)
Wilmington, Delaware

Statement of Basis

September 1991

Introduction

This Statement of Basis (SB) explains the U.S. Environmental Protection Agency's (EPA) position for proposing a "No Further Action with Monitoring" remedy for DuPont Experimental Station located in Wilmington, Delaware (the Facility). A RCRA Facility Investigation was conducted at the Facility and after review of the information therein EPA has tentatively determined that this facility does not pose a risk to human health or the environment. The reasons for this decision are supported in the Risk Assessment and other data contained in the Administrative Record and is summarized in this Statement of Basis. EPA will select the final remedy only after the public comment period has ended and the information submitted during this time has been reviewed and considered.

EPA is issuing this SB as part of its public participation responsibilities under RCRA.

This document summarizes information that can be found in greater detail in the RCRA Facility Investigation (RFI) and Corrective Measures Study (CMS) reports and other documents contained in the Administrative Record for the Facility. EPA and the State of Delaware encourage the public to review these reports and other documents in the Administrative Record in order to gain a more comprehensive understanding of the Facility and RCRA activities that have been conducted there.

EPA may modify the proposed remedy or select another remedy based on new information or public comments. Therefore, the public is encouraged to review and comment on all the corrective measure alternatives which were considered. The public can be involved in the remedy selection process by reviewing the documents contained in the Administrative Record File and attending the public meeting scheduled for September 17, 1991.

Proposed Remedy

The EPA is proposing a "No Further Action with Monitoring" remedy at the Facility to address soil and groundwater contamination based on the Risk Assessment conclusion that conditions at the Facility do not pose a threat to human health and the environment.

FACILITY BACKGROUND

The DuPont Facility is located in Wilmington, New Castle County, Delaware. The Facility is situated in the Brandywine Valley along the banks of the Brandywine Creek as shown in Attachment 1. The Experimental Station is the corporate wide central research and development facility for DuPont. The Facility is dedicated to product research and development. Wastes generated during the research and development consist mainly of acetone, methanol, freon and dichloromethane. All wastes generated at the Facility are incinerated at the Facility's permitted hazardous waste incinerator.

The area of concern is a 9 acre portion of the Experimental Station Facility. It is bounded by the Brandywine River to the south. Otherwise, the area is surrounded by property owned and controlled by

DuPont. The area contains several buildings, paved roads, and paved parking areas situated on a steep hillside.

The subsurface materials consist of bedrock overlain by overburden consisting of a mixture of colluvium and fill material from a former burning pit area. The thickness of the overburden ranges from zero (at numerous bedrock outcrops) to 18 feet. The bedrock is a hard banden gneiss with narrow widely spaced joints. Banden gneiss is a massive body of rock which consists of interlocking crystals and has no porosity. This type of bedrock makes it nearly impossible for groundwater to pass through. The bedrock surface slopes toward the Brandywine Creek.

Groundwater below the Facility occurs at or near the interface between the bedrock and overburden. A few feet below the interface the bedrock has very low permeability. Infiltration from rainfall recharges the thin groundwater flow zone, which discharges at seeps along Creek Road and to the Brandywine Creek.

Site History

The site has been active as a research facility for approximately 90 years. Prior to this, the area along the Brandywine Creek was used in the 1800's for gun powder manufacture by DuPont. Relic structures of these facilities are still in existence along the river front. Review of the Experimental Station files revealed little detailed information about former site activities that may be associated with the contamination sources. The only reference to possible original source areas of contamination is found on Facility blueprints from the 1940's which identified several suspected source areas: Oil storage building 166, Storage building 23 and Burning enclosure building 235.

However, there are no available records to indicate what materials were stored in these areas. An area identified as a burning pit was located south of the burning enclosure. This area was used as a burning pit for solvents. Based on pre-1946 blueprints, a burning pit for the disposal of on-site waste was located in this area. This pit may have received waste up until 1946. Based on this information, DuPont believed that the soils possibly contained "Dowtherm A", a low vapor pressure, heat exchange fluid. Dowtherm A is a mixture of diphenyl and diphenyl oxide manufactured by Dow Chemical.

According to DuPont files, fill material in parking areas and some road beds in the area may have consisted of ash and other fill material obtained from the old burning pit area. Soil contamination was found near building 311 during utility excavation activities in 1986. This discovery led to a series of field investigations including the RCRA Facility Investigation. The purpose of the RFI is to characterize the extent of horizontal and vertical contamination at DuPont and to determine whether a Corrective Measures Study (CMS) is needed. A CMS is a study which investigates available technologies to remediate environmental problems at a Facility.

SITE RISKS

Surface Water

The risk assessment concluded that no facility risks exist in the surface water and Brandywine Creek sediments. The exposure scenarios for children and adults as recreational users of the Brandywine Creek and an industrial worker were used to calculate the risks at the facility. EPA considers carcinogenic risks in the range of 1 in 10,000 to 1 in 1,000,000 to be protective of human health and the environment. All exposure scenarios considered for surface water were found to be within EPAs acceptable range.

The surface water samples were analyzed for priority pollutant VOAs, priority pollutant inorganics and biphenyl/biphenyl oxide. No samples were found to be above detection levels, therefore no cleanup goals were developed for the surface water.

Soil

The contaminant of concern in soil was benzo[a]pyrene. The maximum level found in soil was 46,960 parts per billion. The calculated risk of 1 in 100,000 for this contaminant was identified using the industrial worker exposure scenario. An EPA approved Risk Assessment was conducted at the Facility and concluded that during an excavation event an industrial worker at the DuPont Facility had a 1 in 100,000 chance of contracting cancer. The health based remediation goal for this contaminant is 790 ppb. During an excavation event DuPont would have to remediate the soil to 790 parts per billion of benzo[a]pyrene to be protective of human health and the environment. The occurrence of the soil contamination correlates with the presence of fill material that includes ash and the location of the former burning ground area. The soil samples taken at the facility were analyzed for volatile , biphenyl, biphenyl oxide, base neutral acids and the Appendix IX suite. The Appendix IX suite is a group of chemicals that are listed in the 40 Code of Federal Regulations (C.F.R.) part 264, Appendix IX. Worker exposure to contaminated soils is not possible due to concrete pavement and approximately 4 feet of clean fill above the contaminated soil.

Groundwater

The maximum VOC concentration observed in site groundwater was 7700 ppb of trichloroethene (TCE). The Maximum Contaminant Level (MCL) for TCE is 5 ppb. MCLs are federally enforceable drinking water standards developed under the Safe Drinking Water Act (See 40 C.F.R. part 141). The MCL of 5 ppb for TCE has been determined to be protective of human health and the environment. However, MCLs are based on groundwater being used for drinking water.

DuPont sampled 11 monitoring wells at the facility and analyzed for priority pollutant volatile organic analysis, priority pollutant inorganics, biphenyl/ biphenyl oxide and the Appendix IX suite. 1,2-dichloroethene and vinyl chloride were also detected in some of the wells, however the concentrations were not above the remedial goals estimated for the impact of groundwater discharge to the Brandywine Creek. The average flow in the Brandywine Creek is about 10,000 times greater than the groundwater discharge to the Creek, therefore, a contaminant would have to be 10,000 times greater than the MCL to impact the Brandywine Creek. The MCL for 1,2-dichloroethene is 100 ppb and 2 ppb for vinyl chloride. These MCLs are also based on the assumption that the groundwater will be used for drinking water. However, groundwater at the Facility is in a thin, low yielding water-bearing strata and, therefore, it would not be practical to use this aquifer as a source of drinking water. Also, there are no current users of the groundwater and to address the very unlikely use of the groundwater for drinking, deed restrictions will be recorded.

DESCRIPTION OF THE "NO FURTHER ACTION WITH MONITORING ALTERNATIVE"

The "No Further Action with Monitoring" alternative at the DuPont Experimental Station will consist of a five (5) year groundwater monitoring program. After five (5) years the need for continued monitoring will be reassessed. The monitoring activities will involve groundwater sampling, analysis of samples for VOCs, and measurement of groundwater elevations in wells. Surface water and sediments will not be part of the monitoring program at this time, however, they will be included if elevated levels of contamination are observed in the ground water wells. A groundwater well would have to greatly exceed the 7700 ppb of TCE (the highest level of contamination observed) to have an impact on the surface water and sediments.

Monitoring will be conducted quarterly for the first year, semi-annually the next three years and once during the fifth year. At year five, the schedule and need for monitoring will be reviewed by DuPont and recommendations will be submitted to EPA for review.

The remedial goals for TCE, 1,2-DCE and Vinyl Chloride are 5, 100 and 2 ppb which are MCLs for drinking water. However, since the groundwater at DuPont is not used for drinking water these goals would have to be multiplied by 10,000 to impact the Brandywine Creek. The goals to impact the Brandywine Creek will be used as action levels in the following manner. All existing wells will be included in the monitoring network. Wells MW-3A, MW-3B, MW-4, MW-5, MW-6, MW-7, MW-9 and MW-10 will be used as points of compliance wells. The results of the VOC analyses for each of the constituents of concern will be averaged for the nine (9) compliance wells. Should the average concentration exceed 40% of a remedial goal or should any single analysis exceed 100% of a remedial goal, a resampling will be conducted within 30 days after receipt of the analysis. If the goals are still exceeded, DuPont must resubmit a Corrective Measures Study to include Corrective Measure Alternatives to be evaluated by EPA. Also, an interim measure that includes pumping and treatment of groundwater and a soil vapor extraction system to remediate the contamination of the Brandywine Creek will be implemented by DuPont. Deed restrictions will also be recorded to address the unlikely use of groundwater for drinking and for the excavation of soil.

Public Participation

EPA solicits input from the community on the "No Further Action with Monitoring" alternative. EPA has set a public comment period from August 26, 1991 through September 25, 1991 to encourage public participation in the remedy selection process. The comment period includes a public meeting at which EPA will present the SB, answer questions, and accept both oral and written comments.

The public meeting will be held Tuesday September 17, 1991 at the Concord Pike Library 3406 Concord Pike Wilmington, Delaware 7:30 p.m.

The Administrative Record is available at the following locations:

U.S. EPA Docket Room, Region III
841 Chestnut Building
Philadelphia, PA 19107
Monday-Friday: 9:00 a.m. - 5:00 p.m.

and

Concord Pike Library
3406 Concord Pike
Wilmington, Delaware 19803
Mon./ Fri./Sat.: 10 a.m. - 5 p.m.
Tues./ Wed./Thurs.: 10 a.m. - 9 p.m.

Comments on the SB will be summarized and responses provided in the Response to Comments. The Response to Comments will be drafted at the conclusion of the public comment period and incorporated into the Administrative Record. To send written comments or obtain further information, contact:

Robert W. Stroud (3HW61)
U.S. Environmental Protection Agency
841 Chestnut Building
Philadelphia, PA 19107
(215) 597-6688
8:30 a.m.- 5:00 p.m.
(Monday - Friday).